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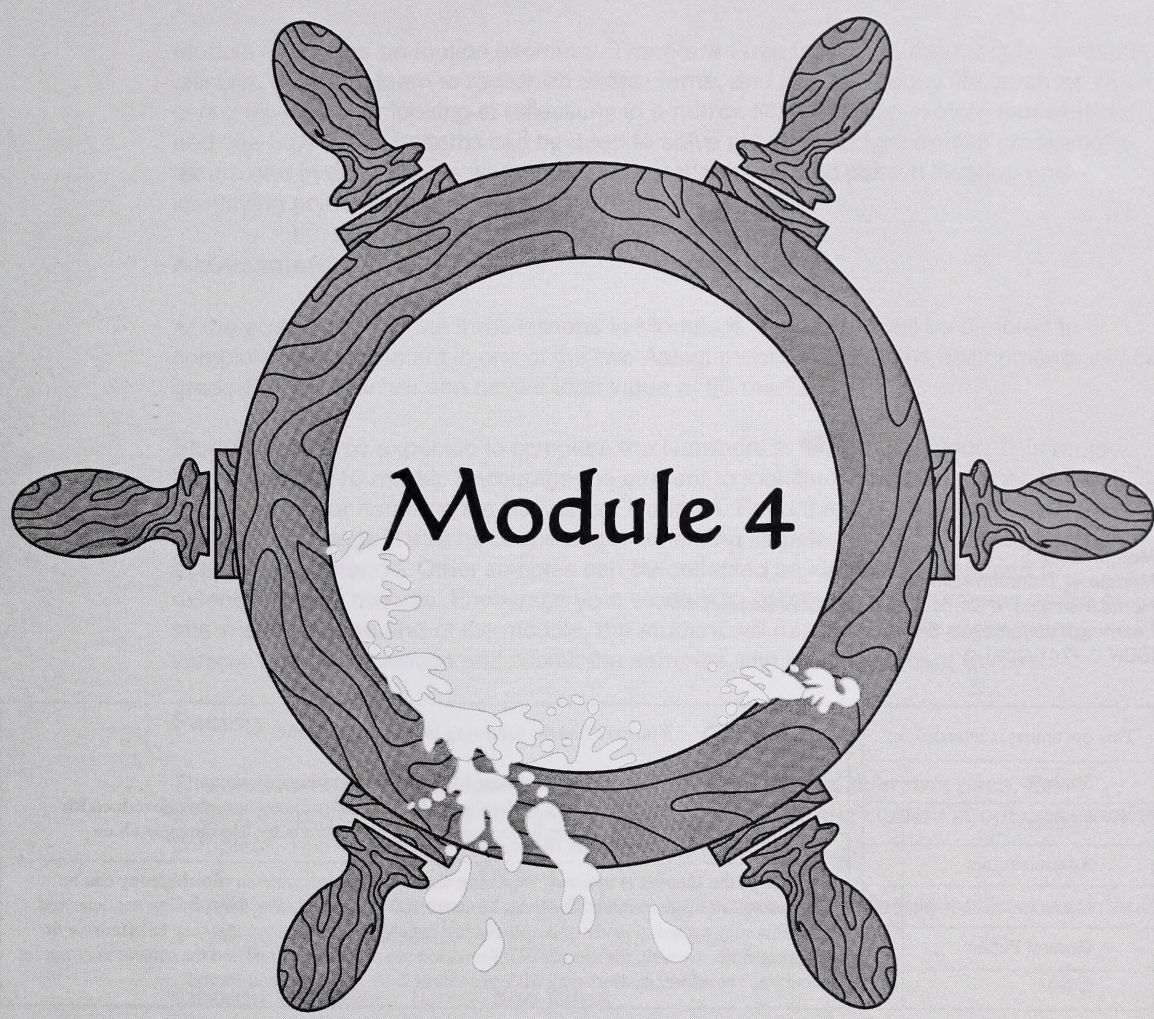
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Mathematics 5



Home Instructor's Guide and Assignment Booklet 4A



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Mathematics 5
Module 4: Transformations
Home Instructor's Guide and Assignment Booklet 4A
Learning Technologies Branch
ISBN 0-7741-2031-2

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	



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Module 4: Transformations

Overview

Module 4 focuses on motion geometry. There are three lessons in this module. In these lessons, students learn to recognize slides, turns, and flips in everyday life, such as when giving directions or looking at reflections in a mirror. Students also explore tessellations, and see how these patterns can be used to solve practical and decorative problems in nature and in daily life. As well, students investigate ordered pairs in locating and identifying points in the first quadrant.

Assessment

At the end of each of the three lessons in Module 4, the student will be directed to complete an assignment in one of the two Assignment Booklets. The assignments will be graded by the teacher and have a total value of 90 marks.

Students are also expected to complete the Numbers in the News project. This project has a value of 10 marks. Encourage the student to look through a newspaper at least once a week for items on the Scavenger Hunt list. Read through the list with your student and suggest that he or she begin collecting samples of the ideas that he or she already understands. Other samples can be collected as ideas are introduced or extended in the module. Encourage your student to collect as many samples as he or she wishes. At the end of the module, the student will need to choose at least one sample for each question and submit the samples with the Assignment Booklet.

Pacing

The module has been designed so that students can work at their own pace. Each lesson, including the lesson assignment, will take the average student about one week to complete. The Challenge Activity in each lesson is optional.

Allowing extra time for review of basic facts and project work, Module 4 will take students 3 to 4 weeks to complete.

Lesson 1: Slides, Turns, and Flips

Overview

In this lesson students are introduced to motion geometry through the investigation of slides, flips, and turns. These ideas are reinforced through the use of everyday applications, such as giving directions or looking in a mirror.

Special Requirements

You may gather the following materials for your student to use in this lesson:

- small rectangular mirror
- tracing paper
- scissors
- pin or tack

Students also need access to a wall mirror.

Sharing Time

Students are asked to discuss what they are learning with their home instructor once in Lesson 1—at the end of Activity 3.

This Sharing Time exercise is open-ended so answers will vary. However, a sample response is given.

Activity 3 Sharing Time

The digits 0, 1, and 8 possess both vertical and horizontal line symmetry as well as point symmetry. The digit 3 has horizontal line symmetry.

Lesson 2: Tessellations

In this lesson students explore tessellations by investigating various shapes that can be used to cover a surface. The resulting patterns are used to solve problems in nature and in everyday life.

Special Requirements

You may gather the following materials for your student to use in this lesson:

- pattern blocks
- scissors
- cardboard
- crayons, coloured pencils, or felt pens

Sharing Time

Students are asked to discuss what they are learning with their home instructor once in Lesson 2—at the end of Activity 1.

This Sharing Time exercise is open-ended, so answers will vary. However, a sample response is given.

Activity 1 Sharing Time

Practice and Homework Book, page 101

Examples of tessellations around the home and in the immediate neighbourhood could include kitchen and bathroom tiles, fabric patterns, brickwork, wallpaper designs, and window panes.

ASSIGNMENT BOOKLET 4A

Mathematics 5

Module 4: Lesson 1 Assignment and Lesson 2 Assignment

Home Instructor's and Student's Comments:

STUDENT FILE NUMBER
(if label is missing or incorrect)

Date Submitted:

Apply Module Label Here

Name

Address

Postal Code

*Please verify that preprinted label is for
correct course and module.*

FOR SCHOOL USE ONLY

Assigned Teacher:

Date Assignment Received:

Grading:

Teacher's Comments

Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.

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When you register for distance learning courses, you are expected to send in Assignment Booklets for corrections regularly. Try to send each Assignment Booklet as soon as you have completed it. Before sending your Assignment Booklet, please check the following:

- Are all the assignments completed? If not, explain why.
- Has your work been reread to be sure the spelling and details are correct?
- Is the record form filled out and the correct module label attached?

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Send all letters in a separate envelope.

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2. All faxing costs are the responsibility of the sender.

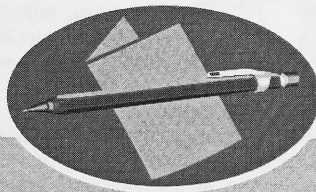
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Mathematics 5

Module 4

Transformations **ASSIGNMENT BOOKLET 4A**



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Summary

	Total Possible Marks	Your Mark
Lesson 1 Assignment	30	
Lesson 2 Assignment	30	
	60	

Teacher's Comments

Mathematics 5

Module 4: Transformations

Assignment Booklet 4A

Lesson 1 Assignment and Lesson 2 Assignment

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ASSIGNMENT BOOKLET 4A

MATHEMATICS 5—MODULE 4: TRANSFORMATIONS

Your mark on this module will be determined by how well you do your assignments in the Assignment Booklets.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

There are two lesson assignments in this Assignment Booklet. The total value of these assignments is 60 marks. The value of each assignment is stated in the left margin.

Be sure to proofread each assignment carefully.

30

Lesson 1 Assignment: Slides, Turns, and Flips

1. The picture below shows a sailor signalling the letter Y.



②

a. Describe the hand positions for the letter Y.

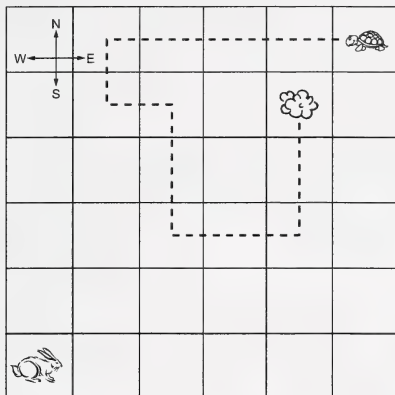
②

b. If you face the sailor and “mirror” his signal, you will signal the letter Q. Describe the hand positions for the letter Q.

- ② **c.** Draw a picture showing the signal for the letter Q.
- ② **d.** To signal the letter K immediately after signaling the letter Y, a sailor can make a quarter turn up with his left hand and a quarter turn down with his right hand. Describe the hand positions for the letter K.
-
-
- ② **e.** Draw a picture showing the signal for the letter K.

④

2. a. The grid shows the path of a turtle that began at the northeast corner of a square field and ended at the tree. Describe the turtle's path. **Note:** The side of each square on the grid represents 1 m.



④

- b. A rabbit begins at the southwest corner of the same field and takes the following path:

- Slide 1 m east.
- Slide 1 m north.
- Slide 1 m east.
- Slide 1 m south.
- Slide 1 m east.
- Slide 1 m north.
- Slide 1 m east.
- Slide 1 m south.
- Slide 1 m east.
- Slide 4 m north.
- Slide 1 m west, ending at the tree.

Draw the rabbit's path on the grid.

- ② c. If the rabbit and the turtle both travel at the same speed, which one would reach the tree first? Explain.

- ① 3. a. In the word that is shown below, predict which letters will look the same when it is held up to a mirror. Explain.

HOUND

- ③ b. Which of the letters have vertical line symmetry? Use pictures to show the lines of symmetry.

- ③ c. Which of the letters have horizontal line symmetry? Use pictures to show the lines of symmetry.

- ③ d. Which of the letters have point symmetry? Use pictures to explain.

30



8

Lesson 2 Assignment: Tessellations

1. Turn to page 231 of your textbook. For each of the four pictures shown magnified in More Tessellations, explain why each picture does or does not show a tessellation.

a. First picture (wallpaper): _____

b. Second picture (bed cover): _____

c. Third picture (tablecloth): _____

d. Fourth picture (floor): _____

Use your pattern blocks to answer questions 2, 3, and 4.

2. Deepika's patio is made from cement blocks that are all shaped like regular hexagons. She removed a cracked block from the centre of her patio, but could not get a block the same shape to replace it.

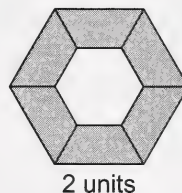
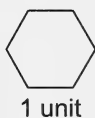
6

- a. Draw pictures to show three possible ways Deepika could use the following shapes of new blocks to replace the cracked block: the red trapezoid, the blue rhombus, the orange square, the tan trapezoid, and the green triangle. She can use any single shape of block or any combination of blocks to fit the space.

There is more space on the next page for your pictures.

- ④ b. Which of the shapes cannot be used in any way to replace the cracked hexagon? Explain why it is not possible to use these shapes.

- ⑥ 3. Begin with a yellow hexagon and think of the length of each side as 1 unit. Using red trapezoids, you can build onto the yellow hexagon to make a larger hexagon that has sides 2 units long.

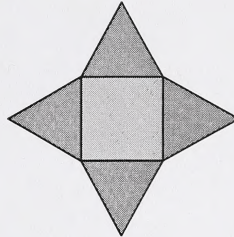


You can keep using red trapezoids to build larger and larger hexagons. Each time, the length of the sides will increase by 1 unit. Draw pictures to show how you can use red trapezoids to build the next two larger hexagons.

There is more space on the next page for your pictures.

⑥

4. Randy used ceramic tiles shaped like the orange square and the green triangle to create a four-pointed star shape, as shown below.



He tried to cover a wall by sliding the star shape. Make Randy's star shape with pattern blocks and trace it to make a paper cutout. Randy realized that his star shapes would not tessellate if used by themselves. Draw pictures to show two different ways that Randy can slide his star shape to cover the wall if he chooses another shape (like one of the pattern blocks) to fill in the gaps.

There is more space on the next page for your pictures.

